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COMMUNICATION CHANNEL SIMULATION AND PROPAGATION EFFECTS: 0.225 to 40.0 GHz
A BIBLIOGRAPHY

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June 1973

Prepared for
Department of the Air Force
Air Force Avonics Laboratory (AFSC)
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U.S. DEPARTMENT OF COMMERCE, Frederick B. Dent, Secretary
NATIONAL BUREAU OF STANDARDS, Richard W. Roberts, Director

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Abstract

This bibliography provides a literature search to locate as many propagation models as possible in the frequency range 0.225 to 40.0 GHz. There was reduced emphasis on high frequency, low frequency, and very low frequency models. The bibliography contains 534 references selected from a total of 3493 which were scanned in title and abstract. It is divided into three sections: communication channel simulation (105 citations); propagation effects (349 citations); and miscellaneous references (80 citations). The literature search covered the open literature from 1968 to 1972 and the reports literature from 1962 to 1972.

Key Words: Channel simulation; communications; propagation effects.

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Compiled by
Anne Y. Rumfelt

INTRODUCTION

This bibliography is a report to sponsor listing citations* identified as being related to communication channel simulation, simulators and models or to propagation effects causing attenuation (path loss) in a communication channel.

OBJECTIVES

The original objectives of the project (WPAFB/AFAL/AAI Contract F33615-72-M-5014) were to provide an exhaustive literature search to locate all possible propagation models. These propagation models were to be sorted and bounded with appropriate constraints and mathematical equations provided for subsequent programming on a communication channel simulator. Gaps in the available knowledge were to be identified.

These project objectives were modified after a change in project personnel and after consultation with the sponsor. The modified objective of the project is to perform a literature search to locate as many propagation models as possible in the frequency range 0.225 to 40 GHz. The literature search is also to include communication channel simulators and propagation effects causing attenuation in a communication channel.

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*The citations listed in this bibliography were taken directly from the NASA Literature Search, the DDC Report Bibliography, and Science Abstracts B. It was not practical within the project limitations to verify the citations against the original documents.

PROGRESS

The literature search has been completed and a bibliography compiled. The bibliography contains 534 references divided into three major categories: Part I -- Communication Channel Simulation, 105 citations; Part II -- Propagation Effects, 349 citations; and Part III -- Miscellaneous References, 80 citations.

The literature search covered the open literature from 1968 to 1972 and the unclassified reports literature from 1962 to 1972. The open literature was searched using Electrical and Electronics Abstracts, an abstracting service that covers both domestic and foreign journals. The reports literature was searched using machine literature searches available from the NASA Scientific and Technical Information Facility and from the Defense Documentation Center.

Machine literature searches on the topic of channel simulation yielded a total of 1231 potential references (152 from NASA and 1079 from DDC). On the topic of propagation effects, machine searches yielded 380 potential references (222 from NASA and 158 from DDC). The open literature search by means of Electrical and Electronics Abstracts (Science Abstracts B) yielded a total of 1882 additional potential references on both topics. Thus, the total number of references scanned in title and abstract in the preparation of this document was 3493. The number of references selected from this group was 534, or about 15%.

One of the references listed in PART III of this report deserves special comment. The "Bibliography on Propagation Effects," by Vogler and Van Horn, was not used as an input to this report. It partitions the spectrum into two regions: 10 GHz-300 GHz and 300 GHz-1000 THz. It thus does not cover a large part of the region of interest below 10 GHz. It covers the open literature primarily, rather than the reports literature.

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16. ABSTRACT (A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.)

This bibliography provides a literature search to locate as many propagation models as possible in the frequency range 0.225 to 40.0 GHz. There was reduced emphasis on high frequency, low frequency, and very low frequency models. The bibliography contains 534 references selected from a total of 3493 which were scanned in title and abstract. It is divided into three sections: communication channel simulation (105 citations); propagation effects (349 citations); and miscellaneous references (80 citations). The literature search covered the open literature from 1968 to 1972 and the reports literature from 1962 to 1972.

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